



US005918014A

# United States Patent [19]

Robinson

[11] Patent Number: **5,918,014**  
 [45] Date of Patent: **Jun. 29, 1999**

[54] **AUTOMATED COLLABORATIVE  
 FILTERING IN WORLD WIDE WEB  
 ADVERTISING**

[75] Inventor: **Gary B. Robinson, Ellsworth, Me.**

[73] Assignee: **Athenium, L.L.C., Cambridge, Mass.**

[21] Appl. No.: **08/774,180**

[22] Filed: **Dec. 26, 1996**

## Related U.S. Application Data

[60] Provisional application No. 60/009,286, Dec. 27, 1995, and provisional application No. 60/012,517, Feb. 29, 1996.

[51] Int. Cl.<sup>6</sup> ..... **G06F 15/163; G06F 17/30;  
 G06F 15/00**

[52] U.S. Cl. .... **395/200.49; 707/10; 706/12**

[58] Field of Search ..... **707/3, 10; 395/200.47,  
 395/200.48, 200.49; 706/12**

[56] **References Cited**

## U.S. PATENT DOCUMENTS

4,870,579	9/1989	Hey	364/419
4,996,642	2/1991	Hey	364/419
5,572,643	11/1996	Judson	395/200.48
5,704,017	12/1997	Heckerman et al.	706/12
5,704,018	12/1997	Heckerman et al.	706/12
5,724,424	3/1998	Gifford	380/24
5,737,619	4/1998	Judson	707/500
5,740,252	4/1998	Minor et al.	380/49
5,754,938	5/1998	Herz et al.	62/425
5,774,170	6/1998	Hite et al.	348/9
5,790,426	8/1998	Robinson	702/179
5,790,935	8/1998	Payton	455/5.1
5,794,210	8/1998	Goldhaber et al.	705/14
5,838,790	11/1998	McAuliffe et al.	380/4
5,842,199	11/1998	Miller et al.	707/2
5,848,396	12/1998	Gerace	705/10
5,848,397	12/1998	Marsh et al.	705/14

## OTHER PUBLICATIONS

Miller, B., "GroupLens: An Open Architecture for Collaborative Filtering," <ftp://ftp.cs.umn.edu/users/bmiller/prop.ps>, Univ. of Minn., pp. 1-18, Oct. 1995.

Upendra Shardanand, "Social Information Filtering for Music Recommendation" Sep. 1994, pp. 1-93, Massachusetts Institute of Technology, Thesis.

"WWW.firefly.com", web site pages, 12 pages, printed out on Jan. 21, 1998 (origination date unknown).

"WWW.amazon.com", web site pages, 15 pages, printed out on Jan. 21, 1998 (origination date unknown).

Primary Examiner—Zarni Maung

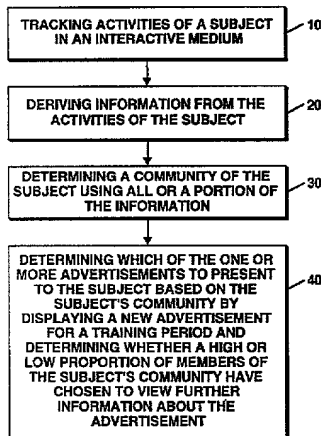
Assistant Examiner—Andrew Caldwell

Attorney, Agent, or Firm—Nutter, McClenen & Fish, LLP

[57] **ABSTRACT**

On the World Wide Web, and other interactive media, it is possible to show different ads to different people who are simultaneously viewing the same content. This invention is based on the fact that people who have shown a tendency for similar likes and dislikes in the past will show a tendency for such similarities in the future. Those people who strongly display such similarities with respect to a particular person ("the subject") are referred to as that person's "community." If the members of a subject's community tend to click on a particular Web ad, then it is likely that the subject will also tend to click on that ad. This invention combines techniques for: determining the subject's community, and determining which ads to show based on characteristics of the subject's community. The information used to determine whether a given individual should be in the subject's community is gleaned from the individual's activities in the interactive medium. Means are provided to track a consumer's activities so all the information he generates can be tied together in the database, e.g. by means of "cookies," or by software running on the consumer's computer, such as an in-line plug-in, a screensaver working in conjunction with the Web browser, or the Web browser itself. A measure of similarity between individuals is generated. The individuals with the greatest calculated similarity become the subject's community; e.g. clusters are formed of groups of very similar consumers. Ads are presented to the subject based on his community, optionally selected based on demographics associated with the community.

25 Claims, 1 Drawing Sheet



106290" 81228800